Alzheimer's disease and other common dementias

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August 19, 2010

Learning objectives

- describe the presentation of the most common types of dementia
- contrast dementia with:
  - normal aging
  - delirium
  - depression
- list the warning signs of dementia
- appreciate the evaluation and management of patients with dementia

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Definition of dementia

- Dementia is a syndrome of acquired, persistent decline …
- … in several realms of intellectual ability …
  - impaired memory
  - disturbed language
  - visuospatial abnormalities
  - decreased problem-solving, abstraction and other executive functions
  - reduced attention
  - decreased ability to complete tasks
  - problems recognizing people or objects
- … that causes functional impairment

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Types of dementia

- Alzheimer's disease (AD)
- vascular dementia
- dementia with Lewy bodies (DLB)
- mixed dementia
- frontotemporal dementia (FTD)
- other
  - "reversible" causes
  - alcohol-related
  - head injury

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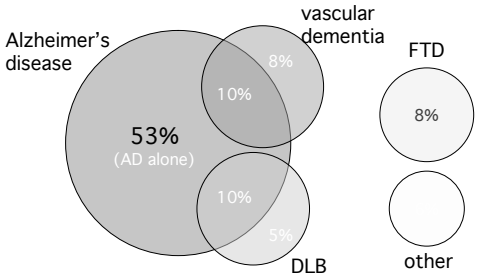
Types of dementia



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Alzheimer's disease

- cognitive impairment:
  - impaired encoding & recall of memory
  - language: word-finding difficulties, reduced verbal fluency
  - visuospatial: abnormal clock-drawing test
- functional impairment:
  - decreased ability to perform instrumental, then basic, ADL's
  - increased reliance on caregivers
- behavioral & psychological symptoms

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Alzheimer's disease

- risk factors:
  - age: 6% of >65, 20% of >85, 45% of >95
  - genetics: apo-e4, APP, PS1, PS2
  - family history
  - cardiovascular risk factors
  - traumatic brain injury
  - late-life depression
- protective factors:
  - genetics: apo-e2
  - medication exposure: NSAID's, statins (?)
  - mild-to-moderate alcohol use (?)

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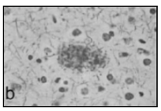
Alzheimer's disease: pathophysiology

- amyloid plaques
  - deposits of excess amyloid
  - probably a central part of pathology
- neurofibrillary tangles
- inflammation



above
amyloid plaque

left
neurofibrillary tangle

(125x magnification)

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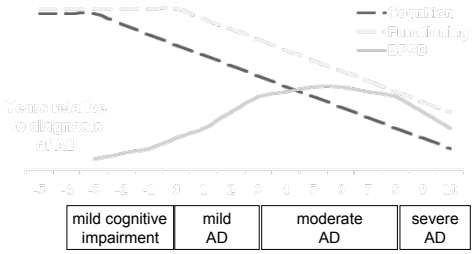
Course of Alzheimer's disease



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Vascular dementia

- stepwise deterioration due to cerebrovascular disease (strokes)
- younger age: 65 to 75 years old
- symptoms depend on location of strokes
- vascular risk factors:
  - cardiovascular disease
  - hypertension
  - dyslipidemia
  - diabetes mellitus
- significant overlap with Alzheimer's ds.

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Dementia with Lewy bodies

- severe memory impairment
- psychotic symptoms, especially VH
- fluctuating mental status
- parkinsonism, especially with antipsychotics
- significant overlap with AD
- contrast with Parkinson's disease dementia

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Frontotemporal dementia

- e.g., Pick's disease
- significant changes in behavior: apathy, disinhibition or both
- problems with executive function: planning, impulse control, judgment
- language may be affected as well
- younger age: 50-65 years old
- more rapid and relentless course
- no specific treatments available

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"Reversible" dementias

- depression
- hypothyroidism
- B_{12} deficiency
- neurosyphilis
- normal-pressure hydrocephalus
- subdural hematoma
- medications, esp. anticholinergic

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Depression versus dementia

depression
- weeks-months
- presence of:
  - guilt, hopelessness
  - suicidal ideation
  - sadness, crying
- fair-to-good response to antidepressants
- may develop into dementia

dementia
- months-years
- may be present:
  - apathy
  - withdrawal
  - sleep changes
- depression may be superimposed
- poor response to antidepressants

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Dementia, delirium or both?

delirium
- sudden change over hours to days
- disturbance of:
  - attention
  - arousal
- resolves with treatment of underlying medical problem
- may be the first time dementia is suspected

dementia
- gradual change over months to years
- arousal usually not affected until late in the course
- delirium may be superimposed

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Normal changes in aging

- slower information processing, and increased reaction time
- decreased ability to store and recall memories
- less cognitive flexibility
- *increased* fund of knowledge
- *not* associated with impairment in functioning

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Mild cognitive impairment

- precursor to Alzheimer's disease: 10-15% conversion rate to AD per year
- criteria:
  - subjective memory complaint
  - objective cognitive impairment in one domain (usually memory); other domains intact
  - no functional impairment (normal ADL's)
  - does not meet criteria for dementia
- treatment studies generally negative so far

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When to suspect dementia

- difficulty remembering new information or recent events
- repetitive conversation or word-finding problems
- not recognizing familiar people
- functional problems:
  - gets lost driving
  - difficulty with money management
  - less able to take care of self

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Making the diagnosis

- bedside cognitive testing (e.g., SLUMS)
- functional assessment (ADLs)
- screen for depression and behavioral symptoms
- assess caregiver burden
- screen for elder abuse
- laboratory tests and brain imaging
- in some cases, neuropsychological testing

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Functional assessment

- personal ADL's:
  - dressing self
  - eating (feeding self)
  - ambulation
  - toileting
  - hygiene (bathing, brushing teeth, etc.)
- instrumental ADL's:
  - shopping
  - housekeeping
  - accounting (check book, bills)
  - food preparation
  - transportation (driving, public transit, taxi)

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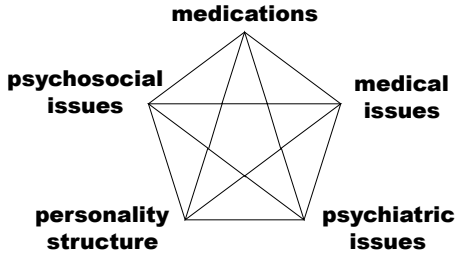
Biopsychosocial formulation



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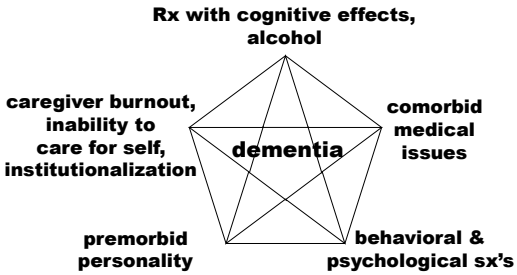
Biopsychosocial formulation



Multifaceted treatment of dementia

- use cognitive enhancers to delay cognitive decline
- address behavioral and psychological symptoms
- support ADLs and help maintain independence
- address caregiver burden
- legal issues: driving, power of attorney, advanced directives, estate planning

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Cognitive enhancers

- cognitive enhancers generally have modest positive effects, and so cost-benefit must be looked at closely
- current treatments appear to delay progression, but not modify the course of the disease
- recommended options:
  - cholinesterase inhibitors (ChE-I's)
  - NMDA antagonist: memantine

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Managing behavioral problems

- address underlying medical and medication factors
- caregiver education and training
- behavioral interventions
- psychopharmacological interventions
  →if behavioral interventions have failed

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Behavioral interventions

- **realistic goal**: reduce severity of BPSD, *not* eliminate them
- consistent environment:
  - non-stressful, constant, familiar
  - soft lighting, calm colors, carpeting
- consistent schedule:
  - stable - change routine only gradually
  - promote sleep - increase daytime activity, appropriate cues, adequate lighting & sound

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Pharmacological interventions

- in general, modest benefits with significant potential for side effects
- best evidence base for atypical antipsychotics
- moderate evidence for antidepressants
- weaker evidence for
  - anticonvulsants
  - cognitive enhancers

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Conclusions

- Dementia is a leading cause of disability and dependence among older adults.
- Dementias are complex neuropsychiatric disorders that include cognitive, functional, emotional and behavioral components.
- Management of dementia includes address cognitive, functional, behavioral, caregiver and legal issues.

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